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Governor
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Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
Division of Water Rights

ROBERT L. MORGAN
Executive Director

JERRY D. OLDS
State Engineer/Division Director

MEMORANDUM

TO: Lee Sim

FROM: Gertrudys B. Adkins

DATE: August 6, 2004

SUBJECT: Upper Bear River Inspection Report

Enclosed is a report of inspection findings and recommendations for improvements on the Upper Bear River Distribution System. Also included in this report is a copy of the photos taken during the field inspection and a map of the diversions in the system.

Sim Weston's diversion ditches are the only diversions that need a measuring device installed. A letter was sent to Mr. Weston requesting that he install a measuring device at each of his diversions. The deadline to comply with the requirements is April 15, 2005.

FIELD INSPECTION REPORT FOR UPPER BEAR RIVER DISTRIBUTION SYSTEM

Prepared by Gertrudys Adkins

Field Inspection date: May 19, 2004.

OBJECTIVE: The main objectives of the field trip were to visit the diversion points and measuring device locations on the main stretch of the Upper Bear River, gather GPS location information, evaluate the existing condition of measuring devices, and determine necessary improvements in the system.

GENERAL OBSERVATION

The Upper Bear is going through a transition period in which all the current gaging stations in the main stem of the river will be converted to real-time telemetry. The Upper Bear River Real-Time Monitoring and Control System is a project being undertaken under the direction of the U.S. Bureau of Reclamation in coordination and support from the Woodruff Narrow Reservoir Company and the Utah Division of Water Rights. The installation of communication equipment and data loggers will be done throughout the month of June and July. Once the project is finished, the Water Commissioner will have direct access to real-time data from each diversion. Also, real-time data will be available to anyone on the Internet at the following site: www.bearriverbasin.org.

1. **McMINN DIVERSION**

   There is a gaging station with an old Stevens recorder. The water commissioner, Ron Hoffman, regularly measures the water with a current meter to make sure that flows are recorded properly and that the rating table is accurate. The channel is clean and well maintained. The Upper Bear River System is in the process of having all 12 diversion stations in the main stem of the river converted to real-time data access and telemetry. Therefore, all Stevens recorders in the gaging stations will be replaced with data loggers and communication equipment. The water commissioner will have access to all of the flow data from his home office. Picture #1: Gaging station. Picture #2: Measuring section and station. Picture #3: Diversion structure.

   Recommendation: None

2. **B.Q WESTSIDE DIVERSION**

   This diversion has a set of 3 headgates. The canal is clean and fairly flat. Ron Hoffman indicated that a major problem he has in this canal is that Sim Weston has a right in this canal and uses two downstream headgates to backup water to his ditches. This in turn backs up the water all the way to

this diversion and the river. There are no measuring devices at Sim Weston's diversion ditches. Picture #4: Diversion headgates.

Recommendation: An accurate measuring device needs to be installed at each of the Sim Weston diversion ditches to measure all the water diverted.

3. **GAGING SITE BY SIM WESTON BRIDGE**

The State of Wyoming has a temporary measuring station below the bridge. There is a PVC pipe with what appears to be a pressure transducer and a level recorder. There is also a staff gage at the site for alternative level measurements. The State of Wyoming's main interest is to record the flows past the bridge and into their diversions. The commissioner is required to send 70cfs to Wyoming. We took measurements at this site using the electronic velocity meter and determined the flows to be 43.83cfs (See Table).

Recommendation: None.

4. **ENBERG DIVERSION**

This diversion site has a series of 3 headgates that are leaning toward one side, however they still work well. This diversion has a right to divert 21 cfs. Pictures #6 &7: Diversion headgate and dam.

Recommendation: None.

5. **RANDOLPH-SAGE CREEK DIVERSION**

There are a series of four, 5-ft headgates at this diversion. Approximately 2 miles downstream from this diversion the commissioner measures the water with a Stevens recorder and rated section. There is a right of 202 cfs at this diversion. A minor problem with this diversion is the accumulation of trash that needs to be manually cleaned up. At times, Mr. Hoffman can flush the trash by fully opening the headgate. In most years, it is difficult to access this site due to standing water in the fields. He sometime uses a four-wheeler to get to it. This year is dry enough to drive close to it.
Pictures #8 & 9: Headgate and diversion dam.

Recommendation: It is advisable that this diversion be kept free of debris and trash throughout the year.

6. **DYKENS CANAL GAGING STATION**

There is a new headgate at this diversion. This diversion has a right to divert 45 cfs. The flows are recorded with a Stevens recorder and a rated section. The rated section and recorder are both in good condition. This station will soon be converted to a real-time gauging station with telemetry. Picture #10: Headgate. Picture#11: Gaging Station.

Recommendation: None.

7. **RANDOLPH – WOODRUFF CREEK (R&W CANAL)**

There is a gaging station with a Stevens recorder that is used to measure the flows. The canal and rated section are in good condition. The flow in the canal was dried up last year and a catwalk was built across the canal. The canal has a capacity of about 450cfs, however water rights in the canal are for approximately 248 cfs. Picture #12: Stevens recorder, float and pulley. Picture #13: Catwalk, canal and gage housing. Picture #14: Waste Gate (5-ft). Picture #17: Main diversion headgate.

Recommendation: None.

8. **CRAWFORD-THOMSON DIVERSION**

There is a set of three, 5-ft headgates at this diversion and a gaging station. The channel is clean and the recording equipment is in good condition. Pictures #15 & 16: Headgates and gaging station.

Recommendation: None.

9. **NEVILLE CANAL DIVERSION**

This is a small canal with water rights of about 4 cfs. There is a wooden dam in the diversion. A gaging station downstream from the diversion measures and records the flows. This gaging station will be made real-time soon. Picture #18: Diversion dam. Picture #19: Headgate. Picture #20: Gaging Station with a Stevens recorder.

Recommendation: None.

Sim Weston Bridge Measuring Section - Data Collected on 5/19/2004

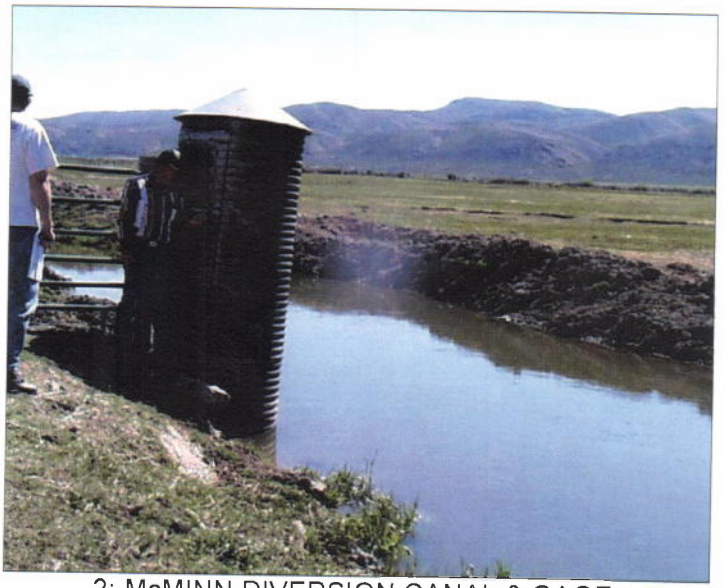
UPPER BEAR RIVER DISTRIBUTION SYSTEM

Distance	Depth (ft)	Velocity (ft/s)	Flow (cfs)
1	0.65	0.25	0.16
2	1.15	0.54	0.62
3	1.1	0.3	0.33
4	1.35	0.64	0.86
5	1.35	0.69	0.93
6	1.1	0.77	0.85
7	1.1	0.85	0.94
8	1.15	0.86	0.99
9	1.2	0.85	1.02
11	1.3	0.93	2.42
13	1.2	0.91	2.18
15	1	0.94	1.88
17	0.9	0.94	1.69
19	0.9	0.78	1.40
21	0.9	0.84	1.51
23	0.9	0.8	1.44
25	0.9	0.91	1.64
27	1	0.84	1.68
29	1.1	0.84	1.85
31	1.2	0.82	1.97
33	1.5	0.87	2.61
35	1.2	0.75	1.80
37	1.2	0.83	1.99
39	1.2	0.82	1.97
41	1.2	0.82	1.97
43	1	0.79	1.58
45	1	0.8	1.60
47	0.9	0.77	1.39
49	0.85	0.65	1.11
51	0.85	0.45	0.77
53	0.85	0.31	0.53
55	0.6	0.13	0.16
57	0.45	0.01	0.01
60	0	0	0.00

Total Flow (cfs)	**43.83**
Avg Depth (ft)	**1.01**

UPPER BEAR RIVER DISTRIBUTION SYSTEM TOUR OF DIVERSIONS (5/19/2004)

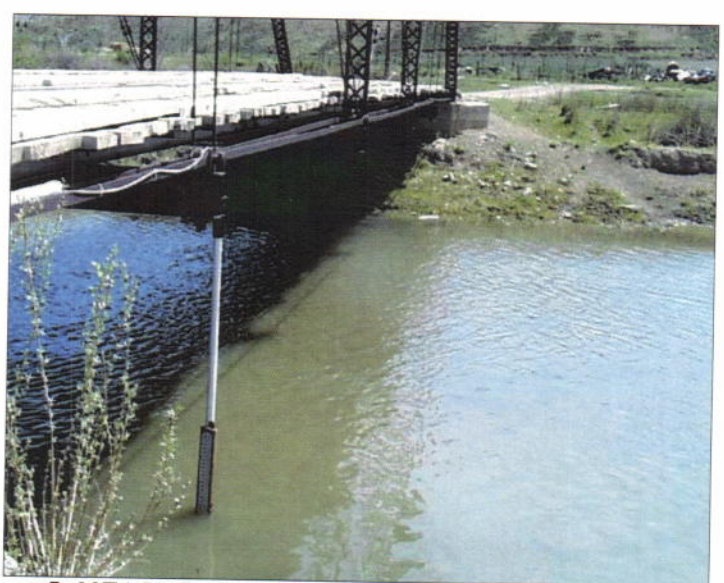
1: McMINN DIVERSION - GAGING STATION



2: McMINN DIVERSION CANAL & GAGE

3: McMINN DIVERSION STRUCTURE

4: B.Q. WESTSIDE CANAL HEADGATE



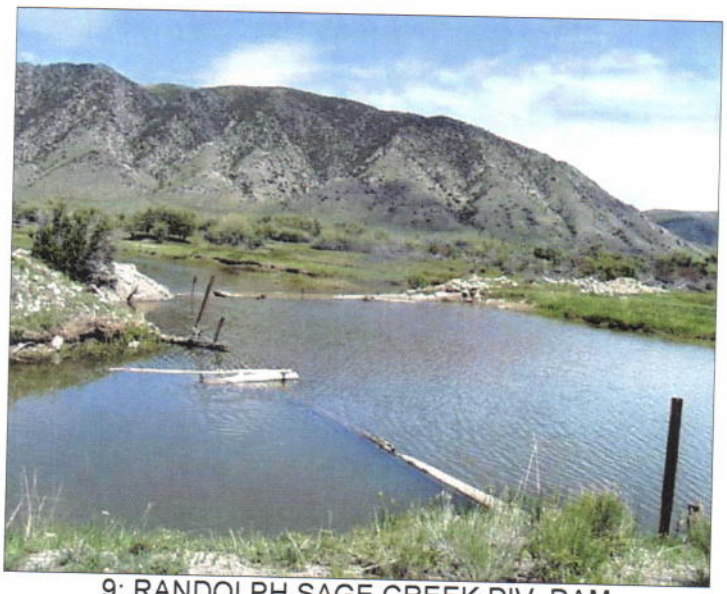
5: MEASURING SITE BY SIM WESTON BRIDGE

6: ENBERG DIVERSION HEADGATE

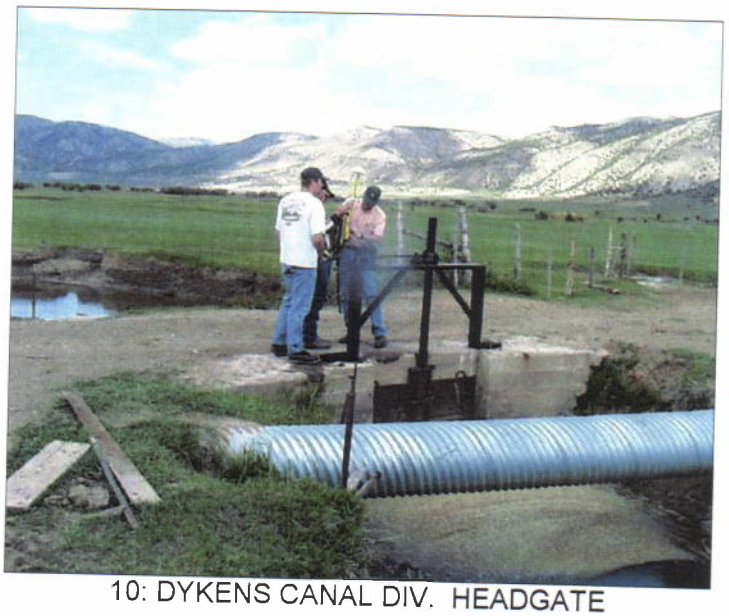
UPPER BEAR RIVER DISTRIBUTION SYSTEM TOUR OF DIVERSIONS (5/19/2004)

7: ENBERG DIVERSION DAM

8: RANDOLPH SAGE CREEK DIV. HEADGATE



9: RANDOLPH SAGE CREEK DIV. DAM

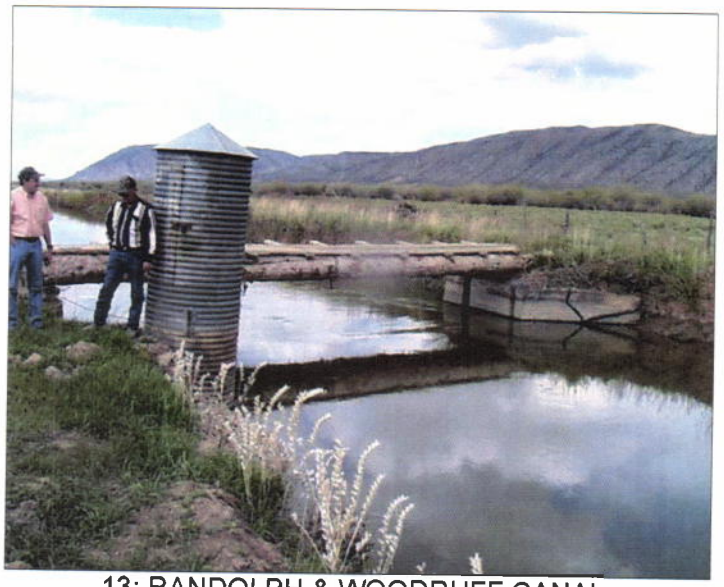


10: DYKENS CANAL DIV. HEADGATE

11: DYKENS CANAL DIV. GAGING STA.

12: RANDOLPH & WOODRUFF GAGING STA.

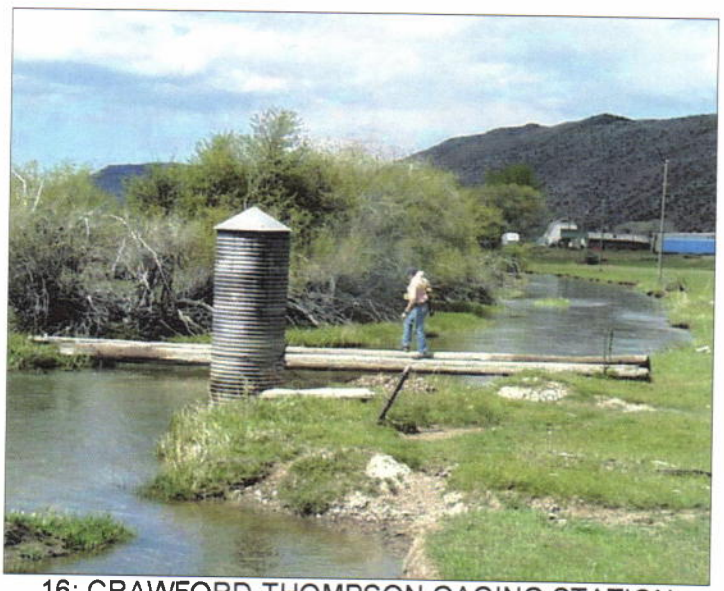
UPPER BEAR RIVER DISTRIBUTION SYSTEM TOUR OF DIVERSIONS (5/19/2004)



13: RANDOLPH & WOODRUFF CANAL

14: RANDOLPH & WOODRUFF WASTE GATE

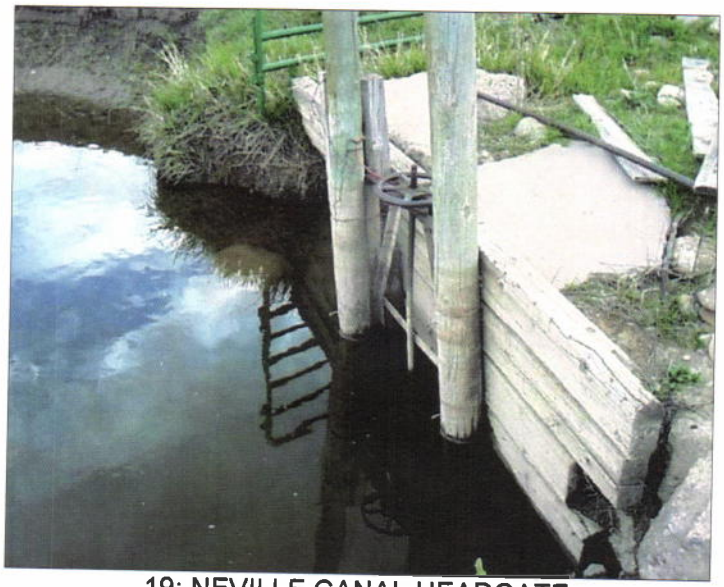
15: CRAWFORD-THOMPSON DIV. HEADGATES



16: CRAWFORD-THOMPSON GAGING STATION

17: RANDOLPH & WOODRUFF DIV HEADGATE

18: NEVILLE CANAL DIVERSION DAM



19: NEVILLE CANAL HEADGATE

20: NEVILLE CANAL GAGING STATION

UPPER BEAR RIVER DISTRIBUTION SYSTEM